

## CLAIMS

1. A filter for a motor vehicle transmission with automatic gearchange, including a torsion damper disposed between an input or driving element which is adapted to be driven in rotation by the crankshaft of the engine of the motor vehicle, and an output or driven element which is adapted to be coupled to an input shaft of the transmission or driven shaft, which torsion damper includes elastic means, characterised by the fact that the stiffness of the damper is variable.
2. A filter according to Claim 1, characterised by the fact that the variable stiffness is obtained with resilient means in the form of helical springs oriented substantially radially.
3. A filter according to Claim 1 or Claim 2, characterised by the fact that the input element is a primary flywheel (10) which has at its radially inner periphery an axial flange (12) for supporting a bearing (13) that provides centring and guiding in rotation for a secondary inertia flywheel (20) constituting the output element.
4. A filter according to one of Claims 1 to 3, characterised by the fact that the primary flywheel (10) is coupled to the driving shaft (11) through a damper plate (18) which is fixed with respect to the driving shaft (11) at the end of the latter.
5. A filter according to Claim 4, characterised by the fact that the primary flywheel (10) is fixed on the damper plate (18) by means of screws (17) which are fitted on the same side as the driving shaft (11).
6. A filter according to one of Claims 1 to 3, characterised by the fact that it constitutes a sub-assembly secured by screws to a damper plate (18), which is itself fixed with respect to the driving shaft (11) at the end of the latter, the said screws being fitted on the same side as the driven shaft (21).
7. A filter according to Claim 4, characterised by the fact that the primary flywheel (10) is fixed on the damper plate (18) by means of screws mounted on the side of the driven shaft (21).
8. A filter according to Claim 4, characterised by the fact that a disc (15) is applied, firstly to the primary flywheel (10), and secondly to a damper plate (18) which is coupled to the driving shaft (11) and centred with respect to the latter.

9. A filter according to Claim 8, characterised by the fact that the damper plate (18) has a central bore (19) adapted to receive a nose (14) of the disc (15) for centring the driven shaft.
- 5 10. A filter according to one of Claims 1 to 7, characterised by the fact that the end of the driven shaft (21) on the engine side is centred and guided by means of a pilot bearing (22) with respect to the driving shaft (11).
- 10 11. A filter according to Claim 1 or Claim 2, characterised by the fact that the secondary flywheel (20) has a central hub (26) for coupling to the driven shaft (21), which hub (26) is centred only by the driven shaft (21).
- 15 12. A filter according to one of Claims 1 to 11, characterised by the fact that the helical springs (34) are mounted on rods (35), the outer ends of which include abutment seatings (36) for the springs (34), with their inner ends being articulated on pivot pins (32) constituting the output means of the torsion damper (30).
- 20 13. A filter according to Claim 12, characterised by the fact that the helical springs (34) are contained in cans (38), the outer ends of which are articulated on pivot pins (31) constituting the input means of the torsion damper (30).
- 25 14. A filter according to Claim 13, characterised by the fact that one end of the input pivot pins (31) is supported by an annular so-called primary cover plate (45).
- 30 15. A filter according to one of Claims 1 to 14, characterised by the fact that a torque limiter (33) is disposed between the torsion damper and the output or driven element.
16. A filter according to Claim 15 taken in combination with one of Claims 12 to 14, characterised by the fact that the torque limiter (33) couples the output pivot pins (32) of the torsion damper (30) with the output element (20) of the filter.
- 35 17. A filter according to Claim 16, characterised by the fact that the output element (20) is a secondary inertia flywheel and the torque limiter (33) includes a spring ring (39) carried by the secondary flywheel (20), which exerts an axial biasing action on a friction ring (40) on the face of the secondary flywheel (20) that faces towards the primary flywheel (10), through an application ring (41).

18. A filter according to Claim 17, characterised by the fact that the secondary flywheel (20) carries a central hub (26) for coupling it to the driven shaft (21), the centring and guiding bearing (13) being disposed radially between the said hub (26) and the axial flange (12) of the primary flywheel (10).  
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19. A filter according to Claim 17 or Claim 18, characterised by the fact that the friction ring (40) carries the output pivot pins (32) of the torsion damper (30).
20. A filter according to one of Claims 1 to 19, characterised by the fact that the torsion damper (30) includes friction means.  
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21. A filter according to Claims 16 and 20 taken in combination, characterised by the fact that the output pivot pins (32) of the torsion damper (30) constitute means for driving in rotation friction rings (44) which are applied elastically against the face of the primary flywheel (10) which faces towards the secondary flywheel (20).  
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22. A filter according to one of Claims 12 to 14, characterised by the fact that the secondary flywheel is limited to a hub (26) having a collar portion or radial arms (29) which are coupled to the output pivot pins (32).
- 20 23. A filter according to Claims 20 and 22 taken in combination, characterised by the fact that the friction ring (44) of the torsion damper (30) is fixed to the hub (26) at the end of the output pivot pins (32).
24. A filter according to Claim 22 or Claim 23, characterised by the fact that the collar portion (29) of the hub (26) has notches (48) at its outer periphery, with which radial lugs (47) of a primary cover plate (45), for limiting the circumferential displacement between the output pivot pins (32) and primary flywheel (10), are in cooperation.  
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25. A filter according to one of Claims 22 to 24, characterised by the fact that the collar portion (29) of the hub (26) is mounted elastically with respect to the said hub (26).  
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26. A filter according to Claim 25, characterised by the fact that the hub collar portion (29) is formed with a set of teeth (50), in mesh with a set of outer teeth (51) of the hub (26), the outer teeth being extended radially outwards so as to constitute fingers (52) which are gripped elastically between the collar portion (29) and a resilient ring (53) applied and secured to the collar portion (29).  
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27. A filter according to Claim 16 when dependent on Claim 7, in conjunction with Claim 19, characterised by the fact that the collar portion (29) is in line with the rods (35) of the torsion damper (30), and the torque limiter consists of two transverse rings (55, 56) lying axially on either side of the collar portion (29) and assembled together by means of two axial short posts (57), the friction ring (40) of the torque limiter being disposed between the collar portion (29) and one of the transverse rings (55), the spring ring (39) being placed between the friction ring (40) and the said transverse ring (55).
28. A filter according to Claim 16 when dependent on Claim 7, in combination with Claim 19, characterised by the fact that the torque limiter comprises discs which are coupled in rotation alternately, one to the collar portion (29) and the next to the hub (26), the friction ring (44) being driven in rotation by a sleeve (55) which is itself driven by the inner ends of the rods (35).
29. A filter according to Claim 8, characterised by the fact that the disc (15) and a closure cover plate (59), secured sealingly to a central sleeve (60), define a closed volume.
30. A filter according to one of Claims 1 to 29, characterised in that the input or driving element drives an accessory such as an oil pump.
31. A filter according to one of Claims 1 to 29, characterised by the fact that the output or driven element drives an accessory such as an oil pump.
32. A filter according to Claim 31, characterised by the fact that the accessory is used for braking the output or driven element.